

# BARNES & THORNBURG

11 South Meridian Street  
Indianapolis, Indiana 46204  
(317) 236-1313  
(317) 231-7433 Fax

## ***IN THE UNITED STATES PATENT AND TRADEMARK OFFICE***

<i>Group:</i>	Unknown	}
<i>Confirmation No.:</i>	Unknown	}
<i>Application No.:</i>	Unknown	}
<i>Invention:</i>	NEUROTHERAPEUTIC CLAVULANATE COMPOSITION AND METHOD	}
<i>Applicant:</i>	Gary A. Koppel	}
<i>Filed:</i>	Herewith	}
<i>Attorney Docket:</i>	22064-71990	}
<i>Examiner:</i>	Unknown	}

### **INFORMATION DISCLOSURE STATEMENT**

Mail Stop PATENT APPLICATION  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

This statement is filed in the application identified above pursuant to 37 C.F.R. § 1.56. No representation is intended that a complete search has been made of the prior art or that no better art references than listed below are available. The filing of this Statement shall not be construed to be an admission that the information cited in the Statement is, or is considered to be, material to patentability as defined in §1.56(b).

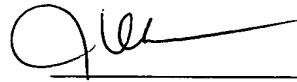
All listed references were cited during prosecution of parent U.S. Application Serial No. 09/640,362, filed August 16, 2000, which is relied upon for an earlier filing date under

35 U.S.C. § 120. Therefore, copies of the references are not required pursuant to 37 C.F.R. § 1.98(d).

None of the cited art is believed to disclose or suggest the invention recited in the claims of the above-identified application. It is therefore believed that the claimed invention is patentably distinguishable over these references.

Please charge any fees that might be due in connection with this Information Disclosure Statement to our Deposit Account No. 10-0435, with reference to our matter 22064-71990. An extra copy of this Information Disclosure Statement is enclosed for that purpose.

Respectfully submitted,  
BARNES & THORNBURG



---

Jill T. Powlick  
Attorney Reg. No.42,088

JTP:jdh  
Indianapolis, IN  
(317) 231-7504

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE  INFORMATION DISCLOSURE STATEMENT	ATTY. DOCKET NO. 22064-71990	SERIAL NO. Unknown
	APPLICANT Gary A. Koppel	
	FILING DATE herewith	GROUP Unknown

## U.S. PATENT DOCUMENTS

*Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date if Appropriate
	KA	4,268,503	May 19, 1981	H. Imanaka, et al.			
	KB	4,302,447	Nov. 24, 1981	D.F. Horrobin			
	KC	4,594,247	June 10, 1986	G.L. Brier			
	KD	5,763,603	June 9, 1998	G. Trickes			
	KE	5,795,877	August 18, 1998	P.F. Jackson, et al.			
	KF	5,824,662	October 20, 1998	B.S. Slusher, et al.			
	KG	5,863,536	January 26, 1999	P.F. Jackson, et al.			
	KH	5,880,112	March 9, 1999	P.F. Jackson, et al.			
	KI	5,905,076	May 18, 1999	R. Singh, et al.			
	KJ	5,912,242	June 15, 1999	P. Pevarello, et al.			
	KK	5,968,915	October 19, 1999	P.F. Jackson, et al.			

## FOREIGN PATENT DOCUMENTS

		Document Number	Date	Country	Class	Subclass	Translation Yes No
	KL	WO 95/20980	August 10, 1995	PCT Interational Application			
	KM						
	KN						
	KO						
	KP						

## OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, Etc.)

	KR	"The Relation Between Fear Induced by Novel Stimulation and Exploratory Behavior" by K.C. Montogomery, J. Comp. Physiol. Psychol. (1955) vol. 48, 254-260.
	KS	"Action of Penicillin on Inhibitory Processes in the Cat's Cortex" by H.V. Duijn, P.A. Schwartzkroin, and D.A. Prince, Brain Res. (1973) vol. 53, 470-476.
	KT	"Convulsant Actions of Penicillin: Effects on Inhibitory Mechanisms" by H. Meyer and D. Prince (1973) vol. 53, 477-482.
	KU	"Penicillin Decreases Chloride Conductance in Crustacean Muscle: A Model for the Epileptic Neuron" by B. Hochner, M.E. Spira, and R. Werman, Brain Res. (1976) vol. 107, 85-103.
	KV	A.B. Chernomordik, Klin. Med. (1980) vol. 2, 102-105.
	KW	"Antagonism by Penicillin of Gamma-Aminobutyric Acid Depolarizations at Presynaptic Sites in Rat Olfactory Cortex and Cuneate Nucleus In Vitro" by H.G. Pickles and M.A. Simmonds, Neuropharmacology (1980) vol. 19, 35-38.
	KX	"GABA and the Behavioral Effects of Anxiolytic Drugs" by D.J. Sanger, Life Sciences (1985) vol. 36, 1503-1513.
	KY	"Convulsant Doses of Penicillin Shorten the Lifetime of GABA-Induced Channels in Cultured Central Neurones" by P. Chow and D. Mathers, Br. J. Pharmac. (1986) vol. 88, 541-547.

Examiner	Date Considered
----------	-----------------

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609.

Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE  INFORMATION DISCLOSURE STATEMENT	ATTY. DOCKET NO. 22064-71990	SERIAL NO. Unknown
	APPLICANT Gary A. Koppel	
	FILING DATE herewith	GROUP Unknown

## U.S. PATENT DOCUMENTS

*Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date if Appropriate
	LA	5,977,090	Nov. 2, 1999	B.S. Slusher, et al.			
	LB	6,004,946	Dec. 21, 1999	B.S. Slusher, et al.			
	LC	6,015,809	January 18, 2000	T. Zhu, et al.			
	LD	6,017,903	January 25, 2000	B.S. Slusher, et al.			
	LE						
	LF						
	LG						
	LH						
	LI						
	LJ						
	LK						

## FOREIGN PATENT DOCUMENTS

		Document Number	Date	Country	Class	Subclass	Translation Yes No
	LL						
	LM						
	LN						
	LO						
	LP						

## OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, Etc.)

LR	"N-methyl-D-aspartate Receptors and the Enhancement of Somatosensory Evoked Potentials in Penicillin Epileptogenesis in Rats" by Z.I. Bashir and O. Holmes, <i>Physiological Society</i> (1987) 19P.
LS	"Competitive Inhibition of N-Acetylated-alpha-Linked Acidic Dipeptidase Activity by N-Acetyl-L-Aspartyl-beta-Linked L-Glutamate" by V. Serval, L. Barbeito, A. Pittaluga, A. Cheramy, S. Lavielle, and J. Glowinski, <i>J. Neurochemistry</i> (1990) vol. 55, 39-46.
LT	"Time Course of Interictal EEG Patterns Induced by a Penicillin Injection into the Olfactory Cortex" by E. Horn, K. Esseling, and R. Wagner, <i>Pharmacology Biochemistry &amp; Behavior</i> (1991) vol. 40, 351-357.
LU	"The Pharmacology of Recombinant GABA <sub>A</sub> Receptors Containing Bovine alpha1, beta1, gamma2L Sub-units Stably Transfected into Mouse Fibroblast L-cells" by A.L. Horne, K.L. Hadingham, A.J. Macaulay, P. Whiting, and J.A. Kemp, <i>Br. J. Pharmacology</i> (1992) vol. 107, 732-737.
LV	I.V. Batueva, N.P. Veselkin, and R. Veskov, <i>Neurofiziologiya</i> (1992) vol. 24 (2), 151-160.
LW	"Increased Intra- and Extracellular Concentrations of Gamma-Glutamylglutamate and Related Dipeptides in the Ischemic Rat Striatum: Involvement of Gamma-Glutamyl Transpeptidase" by O. Orwar, X. Li, P. Andiné, C.-M. Bergström, H. Hagberg, S. Folestad, and M.
LX	"Endogenous Gamma-L-Glutamyl and Beta-L-Aspartyl Peptides and Excitatory Aminoacidergic Neurotransmission in the Brain" by V. Varga, R. Janaky, P. Saransaari, and S.S. Oja, <i>Neuropeptides</i> (1994) vol. 27, 19-26.
LY	"Penicillins and Their Derivatives: Antiulcer/Antistress Properties?" by A.V. Kalueff, G.E. Samonina, and I.P. Ashmarin, <i>Neuropsychopharmacology</i> (1994) vol. 10, 272S.
LZ	"Behavioral Effects of Penicillin in a Test for Anxiety in Rats" by A.V. Kaluev, G.E. Samonina, and I.P. Ashmarin, <i>Bulletin of Experimental Biology and Medicine</i> (1995) vol. 120, 984-986.

Examiner	Date Considered
----------	-----------------

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609.

Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE  INFORMATION DISCLOSURE STATEMENT		ATTY. DOCKET NO. 22064-71990	SERIAL NO. Unknown	
		APPLICANT Gary A. Koppel		
		FILING DATE herewith	GROUP Unknown	

## U.S. PATENT DOCUMENTS

*Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date if Appropriate
	MA						
	MB						
	MC						
	MD						
	ME						
	MF						
	MG						
	MH						
	MI						
	MJ						
	MK						

## FOREIGN PATENT DOCUMENTS

		Document Number	Date	Country	Class	Subclass	Translation Yes      No
	ML						
	MM						
	MN						
	MO						
	MP						

## OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, Etc.)

	MR	"Design, Synthesis, and Biological Activity of a Potent Inhibitor of the Neuropeptidase N-Acetylated Alpha-Linked Acidic Dipeptidase" by P.F. Jackson, D.C. Cole, B.S. Slusher, S. Stetz, L.E. Ross, B.A. Donzanti, and D.A. Trainor, J. Med. Chem. (1996) vol. 39(2), 619-622.
	MS	"Gamma-L-Glutamyl-L-Aspartate Induces Specific Deficits in Long-Term Memory and Inhibits [ <sup>3</sup> H]Glutamate Binding on Hippocampal Membranes" by A. Ungerer, M.S. Bourgeois, C. Mélan, Y. Boulanger, J. Reinbolt, I. Amiri, and J.D. Barry, Brain Res. (1988) vol. 446, 205-211.
	MT	
	MU	
	MV	
	MW	
	MX	
	MY	
	MZ	

Examiner	Date Considered
----------	-----------------

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609.  
Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE  INFORMATION DISCLOSURE STATEMENT	ATTY. DOCKET NO. 22064-71990	SERIAL NO. Unknown
	APPLICANT Gary A. Koppel	
	FILING DATE herewith	GROUP Unknown

## U.S. PATENT DOCUMENTS

*Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date if Appropriate
	NA						
	NB						
	NC						
	ND						
	NE						
	NF						
	NG						
	NH						
	NI						
	NJ						
	NK						

## FOREIGN PATENT DOCUMENTS

		Document Number	Date	Country	Class	Subclass	Translation Yes No
	NL	WO 97/10247	March 20, 1997	PCT			
	NM						
	NN						
	NO						
	NP						

## OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, Etc.)

NQ	E.F. Reynolds, "Martindale, The Extra Pharmacopoeia," Royal Pharmaceutical Society, London, Page 211, Column 2-3, (1996) XP-002161510						
NR	Passani, Lucius A., et al., "N-acetylaspartylglutamate, N-acetylaspartate, and N-acetylated alpha-linked acidic dipeptidase in human brain and their alterations in Huntington and Alzheimer diseases," <i>Molecular and Chemical Neuropathology</i> , vol. 31, No. 2, pages 97-118, (1997) XP-000987254						
NS	Macknin, M.L., "Behavioral changes after amoxicillin-clavulanate," letter, <i>Pediatric Infectious Disease Journal</i> , Vol. 6, No. 9, (September 1987) XP-000987254						
NT	Tsai, Guochuan, et al., "Abnormal Excitatory Neurotransmitter Metabolism in Schizophrenic Brains", <i>Archives of General Psychiatry</i> , Vol. 52, No. 10, pages 829-836, (1995) XP-00987256						
NU	Pangalos, Menelas N., et al. "Isolation and expression of novel human glutamate carboxypeptidases with N-acetylated alpha-linked acidic dipeptidase and dipeptidyl peptidase IV activity", <i>Journal of Biological Chemistry</i> , Vol. 274, No. 13, pages 8470-8483 (March 26, 1999), XP-002161509						
NV							
NW							
NX							
NY							

Examiner	Date Considered
----------	-----------------

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609.  
Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE  INFORMATION DISCLOSURE STATEMENT		ATTY. DOCKET NO. 22064-71990	SERIAL NO. Unknown
		APPLICANT Gary A. Koppel	
		FILING DATE herewith	GROUP Unknown

## U.S. PATENT DOCUMENTS

*Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date if Appropriate
	OA						
	OB						
	OC						
	OD						
	OE						
	OF						
	OG						
	OH						
	OI						
	OJ						
	OK						

## FOREIGN PATENT DOCUMENTS

		Document Number	Date	Country	Class	Subclass	Translation Yes      No
	OL	1 508 977	26 April 1978	Great Britain			
	OM						
	ON						
	OO						
	OP						

## OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, Etc.)

	OR	
	OS	
	OT	
	OU	
	OV	
	OW	
	OX	
	OY	
	OZ	

Examiner	Date Considered
----------	-----------------

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609.  
Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE  INFORMATION DISCLOSURE STATEMENT		ATTY. DOCKET NO. 22064-71990	SERIAL NO. Unknown
		APPLICANT Gary A. Koppel	
		FILING DATE herewith	GROUP Unknown

## U.S. PATENT DOCUMENTS

*Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date if Appropriate
PA		6,204,260 B1	Mar. 20, 2001	Bruns, Jr. et al.			
PB		2002/0002159 A1	Jan. 3, 2002	Koppel			
PC		2002/0028761 A1	Mar. 7, 2002	Koppel et al.			
PD		2002/0049187 A1	Apr. 25, 2002	Bruns, Jr. et al.			
PE							
PF							
PG							
PH							
PI							
PJ							
PK							

## FOREIGN PATENT DOCUMENTS

		Document Number	Date	Country	Class	Subclass	Translation Yes No
PL		WO 97/35839	Oct. 2, 1997	PCT			
PM		WO 98/32766	July 30, 1998	PCT			
PN		WO 99/36403	July 22, 1999	PCT			
PO		WO 00/62067	Oct. 19, 2000	PCT			
PP							

## OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, Etc.)

PR	Drummond, J. et al., "Synthesis of a Cognition Enhancing Beta-Lactam Fused Gamma-Lactam", <i>Terahedron Ltrs</i> , 28(44):5245-8, (1987)
PS	Kabanov, A. et al., "The neuroleptic activity of haloperidol increases after its solubilization in surfactant micelles", <i>FEBS LETTERS</i> , (1989)
PT	Nilsson, B. et al., "β-Lactam Analogues of Oxotremorine 3- and 4-Methyl-Substituted 2-Azetidinones", <i>J. Med. Chem.</i> , 33:580-4, (1990)
PU	
PV	
PW	
PX	
PY	
PZ	

Examiner	Date Considered
----------	-----------------

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609.

Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

BASED ON FORM PTO 1449